NDSU

Biomass and Bioproducts Initiative

From Field to Industry:

Biobased Material into Composites for Structural Applications

NDSU College of Engineering and Architecture MECHANICAL ENGINEERING

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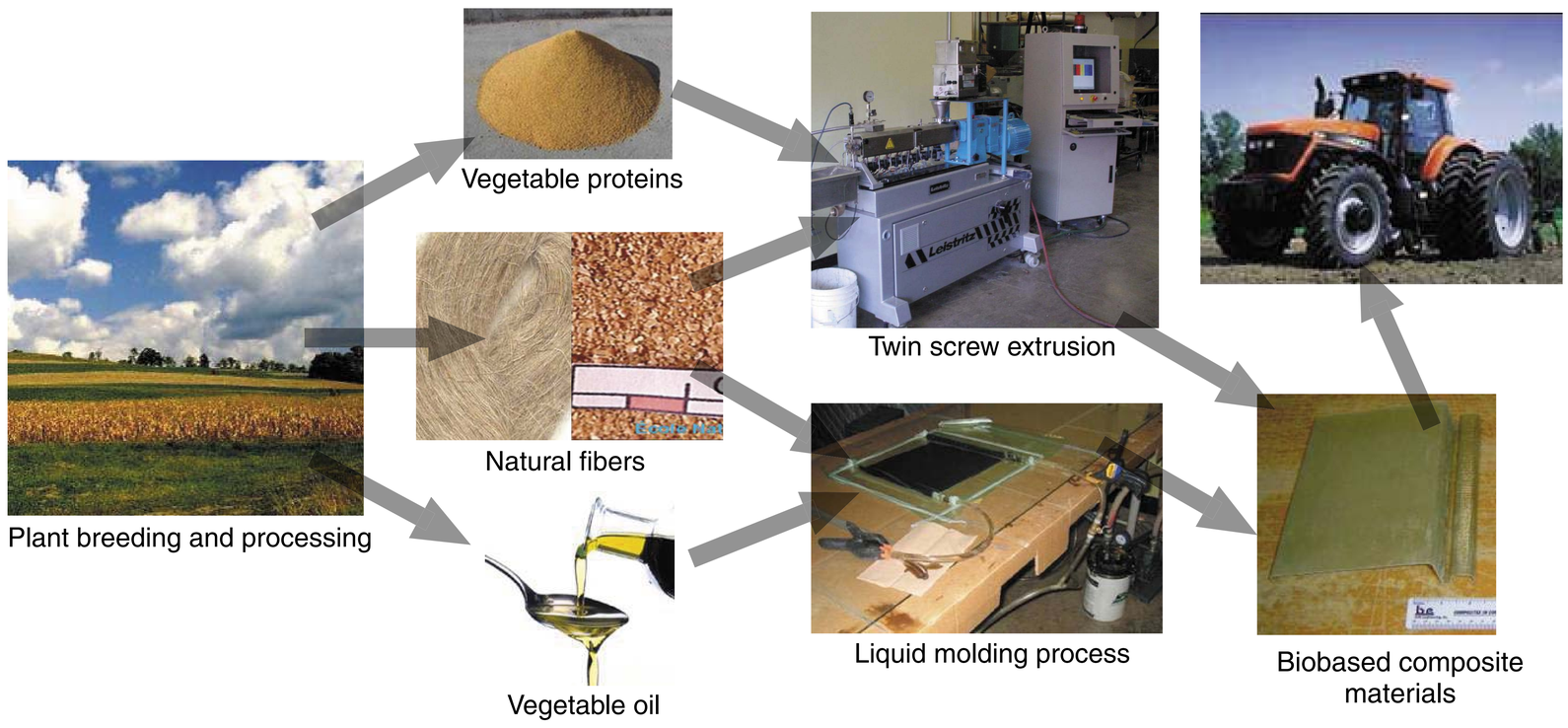
Motivation for Research

Composite materials manufactured from agricultural-based products benefit the environment, agriculture and government because of their renewability, biodegradability and potential economic impact.



NDSU Research Approach

NDSU is assembling a multidisciplinary team to focus on improving the growth, harvest, treatments and development of new agri-based crops that can be processed into structural biobased composites. These composites would be manufactured in local and regional facilities for use in a wide range of applications.

Biobased Composite Application Successes

Mercedes-Benz C and A-Class use flax/PE biobased composite underbody panels, engine and transmission covers.

University of Delaware, Ashland Chemicals and John Deere developed side panels made from biobased composites for John Deere equipment.

Characteristics of Biobased Composites

- Lighter weight
- Good specific strength
- Better insulation and sound absorption properties
- Lower volatile organic compound and hazardous air pollutant emissions
- Better degradation when service-life is exhausted
- Reduce dependence on petroleum-based products

North Dakota-produced material for composites

- Polymers: canola, corn, soybean, flaxseed
- Fibers: flax, corn, sunflower, sugar beet, switchgrass

BioOpportunities

NDSU North Dakota State University